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**LABORATORY**  
**OF THE**  
**INLAND REVENUE DEPARTMENT**

**OTTAWA, CANADA**

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**BULLETIN No. 390**

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**FLAVOURING SYRUPS, Etc.**

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#### NOTE 8.—FEED FLOUR.

*Shorts* (middlings) are legally defined as feeds having a minimum protein content of 15 per cent, a minimum fat content of 4 per cent, and a maximum fibre content of 8 per cent.

An article frequently sold as special shorts, or choice shorts, and usually commanding a higher price than legal shorts, on account of its lighter colour, and its flour-like appearance, usually fails to meet the above standard; and when sold as shorts may be judged as adulterated under the Act. (See Bulletin No. 350.)

The article referred to is deficient in fat. Of 125 samples reported in Bulletin No. 350, seventy samples contained less than 3 per cent of fat, while shorts is required to contain at least 4 per cent. It is also, as a rule, low in protein. Of the 125 samples just referred to, forty-two samples contained less than 15 per cent of protein. On the other hand, the fibre content of this article is generally much below the limit of 8 per cent allowed in shorts.

The only legal way of marketing this feed is to register it, and to furnish a guarantee as described in the Feeds Act. It should not be offered as shorts or middlings, but as *feed flour*.

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December 19, 1917.

J. U. VINCENT, Esq., K.C., B.A., L.Ph.,  
Deputy Minister of Inland Revenue.

SIR,—I would respectfully call your attention to the fact that, during recent years, this department has frequently been asked to look into the matter of fruit syrups and kindred preparations as supplied to the trade for use in soda fountain beverages. We have been prevented from taking up the subject earlier by press of other work; but in June of this year a collection of 141 samples to be made in the cities and principal towns of the Dominion and these have been carefully worked over, with results as inclosed. The investigation was placed in charge of Mr. Geo. H. Brother of this staff, and his report is herewith submitted.

An Order in Council of February, 1911 (published as Circular G. 947) defines fresh fruit juices and sweet fruit juices; but only in very general terms, and without special regard to the employment of these articles for soda fountain use. The beverages offered at these fountains are not usually claimed to be fruit juices, but are essentially aerated water (soda water) flavoured with a fruit juice, which may be actually such, or may be a synthetic preparation imitating the fruit which gives its name to the drink. In the latter case, the satisfactory character of the preparation, so far as flavour is concerned, will depend upon the skill of the manufacturer; and provided that the ingredients are harmless, and that the article is properly described as an imitation, and not as a true fruit juice, there is no ground for complaint. The employment of preservatives and dyes, under the conditions of G. 1111 and G. 1167 is permitted.

These soda fountain syrups are now so largely used that it is desirable to define them more closely than at present is the case under G. 947; and it was mainly with a view to obtaining information regarding them that the work herein reported was undertaken.

Three of the samples, sold as orange flavouring syrups, contain no sugar; and are not syrups, two being concentrated fruit juices, preserved with salicylic acid and formaldehyde, and one a synthetic preparation. The remainder are true syrups (containing sugar) and the results of their examination are summarized as follows:—

Name.	Total samples.	Source of Flavour.			Dyes.			Preservatives.				
		Natural.	Synthetic.	Doubtful.	None.	Certified.	Uncertified.	None.	Ben. acid.	Sal. acid.	Formaldehyde.	Alcohol.
(1) Strawberry .....	27	23	2	2	9	12	6	8	14	2	2	1
(2) Pineapple .....	23	21	1	0	21	1	1	10	7	2	2	1
Cherry .....	21	20	0	1	2	13	6	7	6	1	1	0
Lemon .....	18	7	8	3	4	10	4	12	1	1	1	0
Orange .....	15	6	6	3	3	2	10	5	3	5	2	0
Raspberry .....	11	7	0	4	1	9	1	3	6	1	1	0
Vanilla .....	7	6	1	0	7	0	0	5	0	1	1	0
Chocolate .....	6	6	0	0	6	0	0	6	0	0	0	0
Peach .....	3	3	0	0	3	0	0	0	2	0	1	0
Coffee .....	1	1	0	0	1	0	0	1	0	0	0	0
Ginger .....	1	1	0	0	1	0	0	0	0	1	0	0
Sarsaparilla .....	1	0	1	0	1	0	0	1	0	0	0	0
Rose .....	1	0	0	1	0	0	1	0	0	0	1	0
Fig .....	1	1	0	0	1	0	0	0	1	0	0	0
3) Claret .....	1	0	0	1	0	0	1	0	0	1	0	0
Grape .....	1	0	1	0	0	0	1	0	1	0	0	0
(4) Rainbow .....	1	1	0	0	0	1	0	0	1	0	0	0
Apricot .....	1	1	0	0	1	0	0	0	1	0	0	0
Banana .....	2	0	2	0	1	1	0	0	2	0	0	0
	141	104	22	15	62	49	31	58	47	22	12	2

(1) Alcohol 19·18 p c. volume.

(2) " 35·51 " "

(3) Contains no alcohol.

(4) Mixture cherries and pineapple.

The information furnished herewith will assist your Advisory Board in defining soda fountain syrups; and I would respectfully recommend publication of this report as Bulletin No. 390.

I have the honour to be, sir,

Your obedient servant,

A. MCGILL,  
Chief Analyst.

December 14, 1917.

Dr. A. MCGILL,  
Chief Analyst.

DEAR SIR,—I beg leave to submit the following report on the examination of 141 samples of fruit juices or syrups for soda fountains as used throughout the Dominion.

There is no specific definition for this class of products given in the Adulteration Act, though in G. 947 (February 11, 1911), are the following:—

1. *Fresh Fruit Juices*.—1. "Fresh fruit juices are the clean, unfermented liquid products obtained by the first pressing of fresh, ripe fruit, and correspond in name to the fruits from which they are obtained, and contain not more than two (2) per cent of alcohol by volume."

4. *Sweet Fruit Juices, Sweetened Fruit Juices, Fruit Syrups*.—1. "Sweet fruit juices, sweetened fruit juices, fruit syrups, are the products obtained by adding sugar (sucrose) to fresh fruit juices, and correspond in name to the fruits from which they are derived."

It is worthy of note that in neither of the above definitions is there any mention of synthetic fruit syrups, i.e., syrups made from synthetically prepared esters and acids imitating those found in the natural fruit, nor of the addition of preservatives and artificial colouring matter.

Since, as I have stated above, there are no specific standards set for fruit syrups intended for fountain use, it is important that deviations from the existing standards be examined to determine whether or not they should be classed as adulterations. Of course syrups containing substances harmful to health will not be considered under this head: there is absolutely no doubt or question as to their adulteration, on other grounds than that they are a menace to the health of the public.

*Synthetic Fruit Syrups*.—The use of synthetic, or manufactured preparations for flavouring purposes, such as methyl salicylate for oil of wintergreen, vanillin or coumarin for vanilla extract, ethyl butyrate for pineapple, etc., is quite common. They are cheaper and easier to prepare than the natural extracts, hence bring the manufacturer larger profits if they can be sold at approximately the same price charged for extracts. These preparations are inferior to the natural extracts, since the latter owe their delicate flavour to resins and traces of other esters besides the principal one; the former are practically nothing but an alcoholic solution of the principal ester. The result is that, while the preparation may be stronger (in the sense that less is required to produce the flavour), the natural extract is the more pleasing to the taste. To protect the public and yet permit the sale of synthetic preparations, an Order in Council (G. 1276, April 7, 1917) requires the synthetic preparations to be labeled "Imitation" or "Artificial" in letters as large as the rest of the label.

The problem of protection is somewhat different in the present case, since the public purchases fountain flavours only in mixtures. It is, of course, possible and desirable that manufacturers of syrups be required to conform to a regulation similar to that cited above, but this would protect the vendors only. In order to protect the general public, I would recommend a requirement that fountain drinks or preparations flavoured with synthetic flavours be sold over the counter as "mock" strawberry, "mock" pineapple, etc., as the case may be, and that they be so listed or described on the printed menus.

*Preservatives*.—There is no strong objection to the use of the permitted preservatives (G. 1111, April 15, 1914) in this class of fruit syrups. The syrup is so diluted



when sold to the consumer that none of the listed preservatives would be harmful, even though present in somewhat larger quantities than permitted. It is true there remains the question as to whether any other preservative than the sugar is necessary. Barnard (Chem. Abst. 3 (1909), 2475), claims that fruits preserved in 10 pounds sucrose per gallon of water keep at least seven days, exposed to room temperature during the day and placed in a refrigerator at night; if preserved in 14 pounds sucrose, a syrups results "sufficiently heavy for all practical purposes" which keeps under any ordinary conditions. As no work along these lines has been done in this laboratory up to the present time, we are unable to comment on Barnard's work. As stated above, however, there is no reason why permitted preservatives in reasonable amounts should not be used, provided they are declared by the manufacturer on the label.

*Artificial Colouring.*—Freshly prepared fruit syrups are beautifully coloured, due to the natural pigments present in the fruit. Exposure to light causes most of these colours to fade, often to a very displeasing shade. The fruit itself is not affected, but its appearance renders it unattractive. This would unjustly and seriously affect the business of the dispenser, were it not possible to reproduce nature's colours by the addition of small amounts of harmless dyes. The Department has, therefore, certified in G. 1167, January 18, 1915, seven aniline dyes for use in colouring of foods, as follows: Amaranth 107, Ponceau 3R 56, Erythrosin 517, Orange 1-85, Naphthol Yellow S4, Light Green ST435, Indigo Carmine 692, and in G. 1278, April 21, 1917, Tartrazine 94. The numbers refer to the classification by Schulz and Julius, as edited by Arthur G. Green.

Among these eight certified colours are found the three primary colours (red, blue and yellow) as well as the complementaries, orange and green. They are sufficient, therefore, to satisfy every demand, since combining two or more of them practically any colour or shade may be produced. The United States has but five certified colours: Amaranth 107, Ponceau 3R 56, Orange 1-85, Tartrazine 94, and Indigo Carmine 692. The National Aniline and Chemical Company, Inc., of New York, has combined these so as to produce fifteen shades and colours besides the original certified five, which they sell under such trade names as "Strawberry Red," "Deep Chocolate," "Yellow Colour, Egg Shade," etc. They have kindly furnished us with samples of all their certified colours for food products and confectionery. Investigation of these samples has demonstrated the fact that manufacturers of fruit syrups have here every colour and shade of the natural fruit, so have no excuse for the use of any but certified colours. As will be shown later, the majority of samples of fruit syrups examined were found coloured with certified dyes, a fact much to the credit of the manufacturers as this is the first examination of this class of fruit syrups, as well as the first investigation of dyes used to colour food products in this laboratory.

The method used for the detection and identification of the dye is outlined in the Journal of the Association of Official Agricultural Chemists (J.A.O.A.C., 2, 161). A piece of white woollen yarn is boiled for about fifteen minutes in the solution to be tested, to which a few drops of hydrochloric acid have been added. It is then removed, washed well with water and dried. If an aniline dye is present in the solution, the wool will be fast dyed. When dry it is cut into four pieces, which are treated with concentrated hydrochloric and sulphuric acids, and dilute solutions of sodium and ammonium hydroxides. The colour reactions are noted and by means of a table of these reactions the dye is identified. This identification can be regarded as only approximate, as the method is rather crude, some of the reactions as given in the table being questionable. For example Amaranth 107, according to the table, gives reactions which we could not duplicate with samples of the pure dye. To show these discrepancies, we will copy the reactions as given in the table and under them give those we obtained with two separate samples of the pure dye:—

	Hydrochloric.	Sulphuric.	Sol. Hydrox.	Ammonia.
Given.....	Slightly darker.	Violet to brownish.	Dull brownish.	Little change.
Found.....	Deep red.	Violet.	Red.	Red.

There is no doubt about the violet colour with sulphuric acid, as the table would lead one to believe; not only did the two samples of pure Amaranth 107 give a very decided violet colour but also five red compound colour (strawberry red, etc.) showing Amaranth to be the base dye used in their construction.

Several syrups contained dyes we were unable to identify; these we classed as "artificial" dyes and considered them uncertified. The subject of dyes and their identification is being further investigated and we hope soon to get out our own table of colour reactions and a more rigorous method than that described above. We are much indebted to Mr. W. H. Watkins, chief chemist of the Buffalo factory of the National Aniline and Chemical Company, Inc., for assistance on this subject.

In order to facilitate comparison, tables have been prepared in which the data on all samples of the same flavour is listed. This also permits more extended remarks and criticism than would be possible were the data given in one large table.

#### STRAWBERRY (27 SAMPLES.)

Sample No.	Analyzed at.	Dye.	Preservative.		Sucrose p. c.	Analyst's Description.
			Substance.	p. c.		
76602	Halifax.	Amaranth 107...	None			Genuine syrup.
76605	"	Ponceau 3R 56...	"			Doubtful syrup.
78045	"	None	"			Genuine syrup.
78046	"	"	"			Genuine fruit.
71216	"	Amaranth 107...	"			Genuine syrup.
65261	Ottawa	None	Benzoic acid	0.0619	36.27	Genuine fruit.
65264	"	"	"	0.1135	7.02	Genuine fruit.
65269	"	Amaranth 107	"	0.2167	26.06	Genuine syrup.
72591	"	None	None		29.44	Genuine syrup.
77515	"	Artificial	Alcohol	19.18	2.56	Synthetic syrup.
77534	"	Ponceau 6R 108	None		27.15	Genuine syrup.
77864	"	Amaranth 107	Benzoic acid	0.0980	45.39	Genuine fruit.
77866	"	None	"	0.1342	24.86	Genuine syrup.
77965	"	"	Salic. acid	Trace.	12.90	Genuine fruit.
77966	"	Ponceau 3R 56	Benz. acid	0.0929	22.56	Genuine syrup.
77970	"	Amaranth 107	Formalin	0.0174	0.00	Synthetic syrup.
77971	"	None	Benz. acid	Trace.	37.14	Genuine fruit.
77972	"	"	Formalin	0.0054	13.28	Genuine fruit.
74084	"	Artificial	Salic. acid	0.0168	42.07	Genuine fruit.
75328	Winnipeg	Palatine Red 62	Benz. acid	Trace.	33.12	Genuine syrup.
32696	"	Amaranth 107	"	"	26.28	Genuine syrup.
32701	"	" 107	None		42.38	Genuine syrup.
68123	Vancouver	Ponceau 3R 56	Benz. acid	0.057	11.31	Genuine syrup.
75923	"	Erythrosin 517	"	0.001	69.50	Doubtful syrup.
75930	"	Ponceau 3R 56	"	0.144	13.38	Genuine fruit.
75963	"	Crystal Ponceau 64	"	0.0932	35.34	Genuine syrup.
75967	"	Palatine Red 62	"	0.0668	37.40	Genuine fruit.

In the 27 samples of strawberry flavour examined, 2 were found to be synthetic preparations, 2 doubtful, and 23 genuine, 8 samples contained no preservative, 14 small amounts of soda benzoate, 2 salicylic acid, 2 formaldehyde and 1 alcohol. Of the 18 samples which were artificially coloured, but six contained an uncertified dye.



## PINEAPPLE (22 samples.)

Sample No.	Analyzed at.	Dye	Preservative.		Sucrose p. c.	Analyst's Description.
			Substance.	p. c.		
76606	Halifax.	None	None			Genuine syrup.
76610	"	"	"			" "
78043	"	"	"			" fruit.
78050	"	"	Salic. acid	Trace.		" syrup.
71219	"	"	None			" "
7482	Ottawa.	"	"		42.26	" "
65263	"	"	Formalin	0.0171	18.35	" "
65270	"	"	None		14.19	" "
72593	"	"	Formalin	0.0876	43.59	" "
77512	"	"	Benz. acid	0.0929	50.14	" "
77514	"	Artificial	Alcohol	35.51	15.34	Synth.
77865	"	None	Salic. acid	0.0544	56.46	Genuine fruit.
77869	"	"	Benz. "	0.1548	57.18	" syrup.
77967	"	"	None		19.86	" fruit.
75325	Winnipeg.	"	"		36.16	" syrup.
52697	"	"	"		17.32	" "
68420	Vancouver.	"	Benz. acid	0.045	48.29	" "
68443	"	"	" "	0.009	46.80	" "
73922	"	"	" "	0.020	60.65	" "
75931	"	"	" "	0.101	39.37	" fruit.
75864	"	"	" "	0.1084	55.81	" syrup.
75868	"	"	None		1.28	" fruit.

There was but one synthetic syrup in the twenty-two samples of pineapple flavour examined. This preparation was the only artificially coloured sample. Ten samples contained no preservative other than sucrose, seven contained benzoate of soda, two salicylic acid, two formaldehyde and one alcohol.

## CHERRY (21 samples.)

Sample No.	Analyzed at.	Dye.	Preservative.		Sucrose p. c.	Analyst's Description.
			Substance.	p. c.		
78047	Halifax.	Ponceau 3R 56	None			Gen syrup.
71220	"	Amaranth 107	"			Doubt. syrup.
7487	Ottawa.	"	Salic. acid	0.046	49.26	Gen. "
72597	"	"	"	0.006	11.16	" "
72599	"	"	"	0.004	47.79	" "
77513	"	None	"	0.016	22.15	" fruit.
77517	"	Palatine Red 62	None		17.95	" syrup.
77533	"	Ponceau 3R 56	Formalin*	0.003	1.40	" fruit.
77572	"	Naph. Yel. S 4	Salic. acid*	0.019	15.22	" (mint).
77867	"	Palatine Red 62	None		4.75	" fruit.
77964	"	Artificial	Salic. acid	0.012	39.66	" "
74085	"	Magenta 448	"	0.023	32.91	" "
75327	Winnipeg.	Palatine Red 62	Benz. "	Trace.	22.49	" syrup.
79508	"	Cryst. Ponceau 64	None		66.30	" "
52731	"	Amaranth 107	"		51.70	" "
68418	Vancouver.	Ponc. 3R 56	Benz. acid	0.054	6.54	" "
68441	"	Amaranth 107	"	0.094	16.69	" "
75925	"	"	"	0.01	46.36	" "
75928	"	Ponc. 3R 56	"	0.076	3.47	" fruit.
75869	"	None	None		1.28	" "
75871	"	Amaranth 107	Benz. acid	0.111	8.36	" "

\* Benzoate declared.

Of the twenty-one samples examined, one was doubtful, the remaining twenty genuine. All were found to be coloured but two, thirteen with certified dyes and six with others. Seven contained no other preservative than sucrose, six sodium benzoate, seven salicylic acid and one formaldehyde.

Six samples (Nos. 77513, 77533, 77867, 77964, 75928 and 75871) were labeled and sold as "Maraschino cherries." Steps should be taken to require manufacturers of this class of goods to label their product in a less deceiving manner, since these were not maraschino cherries. The following extract from Food Inspection Decisions, United States Department of Agriculture, F.I.D. 139 (Chem. Abst. 6, (1912), 1473) first defines the term, then places regulations on the labeling of products similar to the above: "Maraschino is a liqueur or cordial prepared by fermentation and distillation from a small wild Dalmatian cherry. Imitations of maraschino should be labelled "imitation." Cherries of other varieties preserved in maraschino liqueur may be called "cherries in maraschino," or if preserved in a syrup flavoured with maraschino alone, may be called "cherries, maraschino flavour" or "maraschino flavoured cherries." Sample No. 75869, put out by the Liquid Carbonic Company of Chicago, conforms to the above: it is labeled "cherries, imitation maraschino flavour."

#### LEMON (18 samples.)

Sample No.	Analysed at.	Dye.	Preservative		Sucrose p. c.	Analyst's Description.
			Substance.	p. c.		
76601	Halifax.....	Tartrazine 94.....	None.....	.....	.....	Doubtful syrup.
78042	".....	".....	".....	.....	.....	Synthetic syrup.
78048	".....	None.....	".....	.....	.....	Genuine syrup.
71215	".....	Tartrazine 94.....	".....	.....	.....	Synthetic syrup.
71217	".....	Orange 1 85.....	Salic. acid.....	Trace.....	.....	" "
71221	".....	Tartrazine 94.....	None.....	.....	.....	" "
71222	".....	Artificial.....	".....	.....	.....	" "
5652	Ottawa.....	Naph. Yel. S 4.....	Salic. acid.....	0.023	54.54	Genuine syrup.
7486	".....	None.....	".....	0.031	39.49	" "
65265	".....	".....	None.....	.....	63.92	" "
72596	".....	Auramine 425.....	Formalin.....	0.022	32.62	" "
72600	".....	".....	None.....	.....	57.36	Synthetic syrup.
77851	".....	Tartrazine 94.....	Salic. acid*.....	0.034	2.09	Genuine syrup.
74081	".....	Quin. Yel. 667.....	None.....	.....	44.18	" "
52693	Winnipeg.....	None.....	".....	.....	46.18	Doubtful syrup.
68419	Vancouver.....	Naph. Yel. S 4.....	".....	.....	57.42	" "
68442	".....	".....	Benz. acid.....	0.063	55.76	Synthetic syrup.
75862	".....	".....	None.....	.....	47.07	" "

\* Benzoate declared.

Genuine flavours, 7; synthetic, 8; doubtful, 3. The dyes show a better proportion, only four samples being coloured with uncertified dyes. Twelve samples were found to be preserved with sucrose alone, four with salicylic acid and one each with sodium benzoate and formaldehyde. The explanation for the large percentage of synthetic preparations of this flavour is probably found in the fact that of all flavours, lemon and orange are the easiest and probably the most commonly reproduced. It is well known that the so-called "circus lemonade" is nothing but a water solution of citric or tartaric acid, sweetened and coloured.

## ORANGE (15 samples).

Sample No.	Analyzed at	Dye.	Preservative.		Sucrose, p.c.	Analyst's description.
			Substance.	p.c.		
76608	Halifax.	None	None			Gen. syrup.
78041	"	Artificial.	"			Comp syrup.
71218	"	Orange 1 85.	Salic-acid	0.023		"
5653	Ottawa	Meth. Orange.	Formalin.	0.014	33.06	"
7485	"	Orange 1 85.	Salic. acid	0.015	52.72	Genuine syrup.
65260	"	Artificial.	Benz. acid	0.057	59.65	"
77516	"	Orange G 14.	Salic. acid	0.020	00.00	"
77868	"	Croceine Or. 13.	Benz. acid	0.170	2.61	"
78612	"	Orange IV 88.	Formalin	0.013	00.00	"
75326	Winnipeg.	None	None		00.00	Syn. syrup.
79506	"	Orange 11 86.	Benz. acid	Trace.	30.39	"
52696	"	Croceine Or. 13.	"	"	20.82	Doubt. syrup.
52999	"	None	None		59.40	"
68417	Vancouver.	Orange 11 86.	"		60.24	"
75926	"	"	Benz. acid	0.013	54.88	Syn. syrup.

Six genuine, three compound, three synthetic and three doubtful. Ten samples were found coloured with forbidden dyes. This must be due to ignorance since no samples were more brilliant in colour than those dyed with orange 1 85. Five samples contained no added preservative (one, No. 75326, not even sucrose), three salicylic acid; five benzoic acid; two formaldehyde.

## RASPBERRY (11 samples.)

Sample No.	Analyzed at	Dye.	Preservative.		Sucrose, p.c.	Analyst's description.
			Substance.	p.c.		
78049	Halifax.	Amaranth 107	Benz. acid	0.032		Doubt. syrup.
71223	"	"	None			Gen. syrup.
72594	Ottawa.	None	Formalin.	0.069	11.36	Gen. fruit.
77535	"	Amaranth 107	Benz. acid	0.266	1.23	Gen. syrup.
77969	"	"	Salic. acid	0.017	37.14	"
74062	"	"	None		55.76	Doubt. syrup.
75330	Winnipeg.	Palatine Red 62	Benz. acid	Trace.	21.67	Gen. syrup.
52702	"	Amaranth 107	None		38.69	Doubt. syrup.
64421	Vancouver.	"	Benz. acid	0.181	1.30	"
75866	"	"	"	0.659	13.73	Gen. fruit.
75924	"	Ponceau 3R 56.	"	0.019	48.46	Gen. syrup.

Out of eleven samples examined, seven were found to be genuine and four doubtful. Only one sample was coloured with an uncertified dye. Three samples contained no preservative, six benzoic acid, one salicylic acid and one formaldehyde.

## VANILLA (7 samples).

Sample No.	Analyzed at.	Dye.	Preservative.		Sucrose. n. c.	Analyst's description.
			Substance.	p. c.		
76607	Halifax.....	None.....	None.....			Gen. syrup.
78044	".....	".....	".....			".....
5654	Ottawa.....	".....	Formalin.....	0.318	36.69	Syn. "
5655	".....	".....	Salic. acid.....	0.011	37.08	Gen. "
74083	".....	".....	None.....		57.49	".....
75334	Winnipeg.....	".....	".....		56.82	".....
52698	".....	".....	".....		50.59	".....

There was but one synthetic preparation (flavoured with coumarin) in the seven samples examined. Aniline dyes were found in none, though No. 75334 was coloured with caramel. Two contained small amounts of foreign preservatives, salicylic acid and formaldehyde.

## CHOCOLATE (6 samples).

Sample No.	Analyzed at.	Dye.	Preservative.		Sucrose. p. c.	Analyst's description.
			Substance.	p. c.		
76603	Halifax...	None.....	None.....			Gen. syrup.
72592	Ottawa.....	".....	".....		48.66	".....
72595	".....	".....	".....		29.82	".....
72598	".....	".....	".....		43.98	".....
79511	Winnipeg.....	".....	".....		61.60	".....
52700	".....	".....	".....		44.40	".....

No comment is necessary on the above; it speaks for itself.

## PEACH (3 samples).

Sample No.	Analyzed at.	Dye.	Preservative.		Sucrose. p. c.	Analyst's description.
			Substance.	p. c.		
65262	Ottawa.....	None.....	Formalin.....	0.050	44.17	Gen. syrup.
77871	".....	".....	Benz. acid.....	0.059	17.31	".....
75870	Vancouver.....	".....	".....	Trace.	31.58	".....

All genuine, none dyed. Two were preserved with sodium benzoate and one with formaldehyde.

## MISCELLANEOUS (11 samples).

Sample No.	Analyzed at.	Flavour.	Dye.	Preservative.		Sucrose. p. c.	Analyst's description.
				Substance.	p. c.		
76604	Halifax.....	Coffee.....	None.....	None.....	.....	.....	Gen. syrup.
76609	".....	Ginger.....	".....	Salic acid.....	Trace.	.....	" "
71224	".....	Sarsaparil.....	".....	None.....	.....	.....	Syn. "
65259	Ottawa.....	Rose.....	Aniline Yel. 7.....	Formalin.....	0.018	45.88	Doubt. "
77870	".....	Fig.....	None.....	Benz. acid.....	0.170	43.08	Gen. fruit.
77872	".....	Claret.....	Artificial.....	Salic. ".....	0.019	51.40	Doubt. syrup.
77964	".....	Grape.....	Indigotine P. 693.....	Benz. ".....	0.075	00.00	Syn. "
75965	Vancouver.....	Rainbow.....	Erythrosin 517.....	" ".....	0.170	8.74	Gen. fruit.
75929	".....	Apricot.....	None.....	" ".....	0.082	29.88	" "
68422	".....	Banana.....	Ponceau 3R 56.....	" ".....	0.110	42.60	Syn. syrup.
75927	".....	".....	None.....	" ".....	Trace.	56.26	" "

Six genuine, four synthetic and two doubtful. Three samples were coloured with uncertified dyes. Six were found to contain sodium benzoate, two salicylic acid, and one formaldehyde.

In the collection were found three extracts (7451, lemon; 7495, vanilla; 7450, pineapple) and a soft drink (No. 75331, loganberry) collected by mistake.

*Summary.*—In the total number of syrups examined (141), one hundred and four were found to be genuine, twenty-two synthetic and fifteen doubtful. There were only thirty-one samples coloured with uncertified dyes. Fifty-eight samples contained no added preservative, forty-seven benzoic acid or benzoates; twenty-two salicylic acid; twelve formaldehyde and two alcohol. Such low percentage of synthetic preparations and syrups coloured with uncertified dyes in this representative collection, indicates that it will be a comparatively easy matter to enforce the standards as recommended in the first part of this report.

GEO. H. BROTHER,

Assistant Analyst.





## BULLETIN No. 390—FRUIT FLAVOURS.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)
				Quantity.	Cents.		
						Manufacturer.	Furnisher.

## DISTRICT OF QUEBEC CITY—F. X. W. E. BELAND, INSPECTOR.

1917.							
June 20	Esence de fruits	71215	Peter Demetre, 74 St. Jean, Quebec.	3 botz.	1.00	Imperial Ext. Co., Toronto.	Lemon.
" 20	"	71216	Jos. Bretton, 75 St Paul, Quebec.	3 "	1.00	"	Strawberry.
" 20	"	71217	T. Dussault, 45 St. Joseph, Quebec.	3 "	1.50	A. B. Dupuis, Toronto.	Lemon.
" 20	"	71218	Marathon Ice Cream, Joseph, Quebec.	3 "	1.00	"	Orange.
" 20	"	71219	A. C. Thivierge, 408 St. Valier, Quebec.	3 "	70	Imperial Ext. Co., Toronto.	Pineapple.
" 20	"	71220	Boston Ice Cream, Quebec.	3 "	70	"	"
" 20	"	71221	"	3 "	3.00	Laren & Ldt., Toronto.	Lemonade.
" 20	"	71222	"	3 "	1.05	Imperial Ext. Co., Toronto.	Lemon.
" 20	"	71223	"	3 "	1.05	"	Raspberry.
" 20	"	71224	"	3 "	1.05	"	Citronelle.

## DISTRICT OF QUEBEC PROVINCE—N. CADIEUX, TEMPORARY INSPECTOR.

June 26	Lemon Extract	5652	Constantin Janella, St. Jérôme.	3 pzs.	1.00	T. J. Couches & Co., Toronto.	
" 26	Orange	5653	J. A. Ducloux, St. Jérôme.	3 "	1.00	The Chatain's Candy Co., Toronto.	
" 26	Cream Soda	5654	A. Desjardins, St. Jérôme.	3 "	50	Vendor	
" 26	"	5655	S. Desormeaux, St. Jérôme.	3 "	1.00	"	

## DISTRICT OF THREE RIVERS—DR. V. P. LAVALLEE, INSPECTOR.

[illegible]

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

Aug.	15	Fruit Flavour.....	74081	New York Syrup Co., 352 Colonial Ave., Montreal.	3 bota.	1.50	Vendors	Lemon.
"	15	"	74082	"	"	1.50	"	Raspberry.
"	15	"	74083	"	"	1.50	"	Vanilla.
"	7	"	74084	The Crettans' Co., Ltd., St. Lawrence Boul.	3 jars.	3.75	"	Strawberry Fruit.
"	7	"	74085	"	"	3.80	"	Cherry Fruit.

## DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.

June 19	Fruit Flavours	77512	B. Hutchings, 793 Bank St., Ottawa.	3 bota.	1.20	J. McLaughlin, Ltd., Toronto.	Pineapple.
" 19	"	77513	G. Poulos, Somerset and Bank 1 Sta., Ottawa.	12 oza.	1.25	"	Marachino Cherry. $\frac{1}{2}$ of 1% Benz. of Soda.
" 19	"	77514	S. Adams, 97 Bank St., Ottawa.	3 bota.	75	E. O. Preston & Co., Toronto.	Pineapple. Coloured.
" 20	"	77515	Russell Candy Store, 40 Sparks St., Ottawa.	"	1.00	R. B. Hayhoe & Co., Toronto.	Strawberry. Coloured.
" 20	"	77516	"	3 "	50	E. W. Jeffries, Walkerville, Ont.	
" 20	"	77517	"	3 "	25	Fowler's	
" 30	"	77533	T. Drossos, Cornwall	3 pta.	1.20	Imperial Ext. Co., Toronto.	W. P. Downey, Montreal
" 30	"	77534	W. C. Burns, Cornwall	24 oza.	1.35	J. A. Smith & Co., Ltd., Toronto.	Sheriff's Marachino Cherries. Contains Soda Benz. and Colour.
" 30	"	77535	"	24 "	1.35	"	Strawberry. Contains Colour and $\frac{1}{2}$ of 1% Sod. Benz.
" 30	"	77572	J. L. Rochester, Ltd., Ottawa	1 jar.	1.50	J. McLaughlin, Ltd., Toronto.	Raspberry. Creme de Menthe (Cherries). Contains more than $\frac{1}{2}$ of 1% Benz. Sod. and Colour.
Aug. 10	"						

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						Manufacturer.	Furnisher.

## DISTRICT OF KINGSTON—JAMES HOGAN, INSPECTOR.

1917.							
June 13	Strawberry	72591	W. E. Austin, Kingston	12 ozs.	30	J. H. Smith, Toronto	
" 18	Chocolate	72592	" " "	12 "	30	" "	
" 13	Pineapple	72593	T. Sakell, Kingston	12 "	30	Vendor	
" 13	Raspberry	72594	" " "	12 "	30	" "	
" 13	Chocolate	72595	" " "	12 "	30	" "	
" 13	Lemon	72596	G. Masoud, Kingston	12 "	30	" "	
" 13	Red Cherry	72597	" " "	12 "	30	J. H. Smith, Toronto	
" 13	Chocolate	72598	" " "	12 "	30	Vendor	
" 13	Red Cherry	72599	B. Zbar, Kingston	12 "	30	J. H. Smith, Toronto	
" 13	Lemon	72600	" " "	12 "	30	" "	

## DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.

June 14	Fruit Flavour	77864	Imperial Ext. Co., 10 Matilda St., Toronto	3 jars.	1.25	Vendors	Shirriff's Beans, and Colour.
" 14	"	77865	The T. A. Lytle Co., Ltd., 300 King Rd., Toronto	3 pks.	1.05	"	Pineapple, Crushed Fruit.
" 14	"	77866	" " "	3 bota.	90	"	Strawberry.
" 15	"	77867	Patterson Candy Co., Ltd., 951 Queen St. W., Toronto	3 jars.	25	"	Cherry.
" 15	"	77868	" " "	3 bota.	25	"	Orange.
" 15	"	77869	Thos. McMahon, 173 Ave. Toronto	3 bota.	60	"	Acme Brand, Lemon.
" 16	"	77870	J. Hungerford Smith Co., Ltd., 19 Alice St., Toronto	3 "	60	"	Contains Colour and 1% Beans Soda.
" 16	"		" " "	3 "	60	"	Pineapple, Contains 1% Beans Soda.
" 16	"		" " "	3 "	60	"	Figs, Contains 1% Beans Soda.



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## DISTRICT OF NORTHERN ONTARIO—THOS. ARMSTRONG, INSPECTOR.

1917.							
July 4	Fruit Flavour.....	74612	W. R. Lowry, Cohalt .....	3 pts.	1.05	J. J. McLaughlin, Toronto...	

## DISTRICT OF MANITOBA—J. B. COSGROVE, INSPECTOR.

June 21	Fruit Flavour.....	75325	Arlington Launch, 885 Ave., Winnipeg.	Portage 3 pts.	90	MacNab & Roberts, Winnipeg	Pineapple.
" 21	" .....	75326	Ruby Confectionery, 497 Ave., Winnipeg.	Portage 3 "	1.15	" "	Orange.
" 22	" .....	75327	Gordon Mitchell Co., 336 Ave., Winnipeg.	Portage 3 "	90	Sheriff's, Toronto .....	Cherry.
" 22	" .....	75328	" .....	" 3 "	90	" "	Strawberry.
" 25	" .....	75330	R. G. Gordon, 280 Ave., Winnipeg.	Portage 3 "	90	" "	Raspberry.
July 3	" .....	75331	F. A. Kent, Killarney .....	" 3 "	1.05	Oregon Fruit Juice Co., Salem, Oregon.	Loganberry.
" 4	" .....	75334	A. H. Atkinson, Deloraine .....	" 3 "	1.50	McLaren's, Ltd., Winnipeg.	Vanilla.
" 10	" .....	75346	W. H. Wiggins, Holland .....	" 3 "	1.05	J. H. Smith & Co., Toronto.	Orangeade.
" 10	" .....	75348	Geo. Blackwell, Holland .....	" 3 "	90	McLaren's Ltd., Winnipeg.	Wild Cherry.
" 16	" .....	75511	Mac's Confectionery, 891 West monster Ave., Holland .....	" 3 "	1.05	MacNab & Roberts, Winnipeg.	Chocolate.

## DISTRICT OF ALBERTA—A. W. R. MARKLEY, INSPECTOR.

June 22	Fruit Flavours .....	528603	The Owl Drug Co., Edmonton...	3 pts.	75	Vendors .....	Lemon. Made from ex-tract.
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June 22	Fruit Flavours	529933	The Owl Drug Co., Edmonton	3 pts.	75	Vendors	Lemon. tract.	Made from ex-
"	"	529934	A. Hallor, Edmonton	3	1.05	Vendor	Orange. Made from con-	
"	"	529935	"	3	1.05	"	Strawberry. Made from	
"	"	529936	Harry Barkett, Medicine Hat	3	60	Shanrock Bottling Works,	Pineapple. Made from	
"	"	529937	Dawson's, Medicine Hat	3	60	Medicine Hat Vendors	concentrated.	
"	"	529938	Jackson & Co., Lethbridge	3	4	"	Vanilla. Made from con-	
"	"	529939	Palace Confectionery, Lethbridge	3	60	"	centrated.	
"	"	52700	Rochon's Ltd., Calgary	3	45	"	Orange.	
July	"	52701	"	3	45	"	Chocolate.	
"	"	52702	"	3	45	"	Strawberry. Vegetable	
"	"	52731	"	3	45	"	colour added.	
"	"		"	3	45	"	Raspberry.	
"	"		"	3	45	"	Cherry. Vegetable colour	
"	"		"	3	45	"	added.	

## DISTRICT OF ROCKY MOUNTAINS—THOS. PARKER, INSPECTOR.

July 13	Fruit Flavours	63417	E. W. Hazlewood, Trail	14 pts.	1.00	J. H. Smith, Toronto	Orange.
"	"	63418	"	14	1.00	"	Cherry.
"	"	63419	"	14	1.00	"	Lemon.
"	"	63420	"	14	1.00	"	Pineapple.
"	"	63421	"	14	1.00	"	Raspberry.
"	"	63422	"	14	1.00	"	Banana.
"	"	63423	"	14	1.00	"	Strawberry.
"	"	63441	W. H. Wainman, Rossland	14	75	J. J. McLaughlin, Toronto	Cherry.
"	"	63442	"	14	75	"	Lemon.
"	"	63443	"	14	75	"	Pineapple.

## DISTRICT OF VANCOUVER—G. G. ARMYTAGE, INSPECTOR.

June 28	Lemon	75862	Almonds Ltd., Dunlevy Ave., Vancouver.	Pender E. and 3 pts.	1.00	J. H. Smith Co., Toronto...	.....
"	28 Strawberry	75863	" "	"	3	"	.....
"	28 Pineapple	75864	" "	"	3	"	.....
July	3 Rainbow	75865	Gavin Bros. & Leigh, Pender E. and Raymour St., Vancouver.	1 jar.	1.50	Gray, McLean & Percy, Port- land, Oregon.	.....
"	3 Raspberry	75-66	" "	"	1	1.45	"
"	3 Strawberry	75867	" "	"	1	1.45	"
"	3 Pineapple	75868	" "	"	1	1.25	Vendors
"	4 White Cherry	75869	Healey Young Co., 565 Hamilton St., Vancouver.	"	1	1.65	The Liquid Carbonic Co., Chicago.
"	4 Peach	75870	" "	"	1	1.30	J. H. Smith, Ltd., Toronto.
"	4 Maraschina Cherry	75871	" "	"	1	1.65	"



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				Quality.	Cents.	Manufacturer.	Furnisher.	

## DISTRICT OF VICTORIA—G. G. ARMYTAGE, ACTING INSPECTOR.

1917	July 23	Pineapple.	75922	H. A. Lilley, 1417 Douglas St., 2 pks. Victoria.	2 "	50	J. H. Smith & Co., Ltd., Toronto.	Added colour.
"	"	23 Strawberry.	75923	" " " "	2 "	50	" " " "	" "
"	"	23 Raspberry.	75924	" " " "	2 "	50	" " " "	" "
"	"	23 Cherry.	75925	Terry's Drug Store, Fort Douglas St., Victoria.	2 "	50	Vendor	" "
"	"	23 Orange.	75926	" " " "	2 "	50	" " " "	" "
"	"	23 Banana.	75927	" " " "	2 "	50	" " " "	" "
"	"	23 Cherry.	75928	National Drug & Chem. Co. of Canada, Ltd., Victoria.	1 gal.	1.42	J. H. Smith & Co., Ltd., Toronto.	Added colour.
"	"	23 Apricot.	75929	" " " "	1 "	1.25	" " " "	" "
"	"	23 Strawberry.	75930	" " " "	1 "	1.42	" " " "	Added colour.
"	"	23 Pineapple.	75931	" " " "	1 "	1.33	" " " "	" "